Functional Soil Property Maps Are Just a Click Away

With data provided by the Africa Soil Information Service (AfSIS), farmers, agricultural experts, and natural resource managers will be able to identify the best options for sustainably improving crop production and better managing the land, including contributing to better ecosystem services management at regional, national, and local levels.

The AfSIS project involves probing the landscape of sub-Saharan Africa, using a variety of highly accurate digital soil mapping techniques including remote sensing, infrared and x-ray spectroscopy scanning techniques, to create detailed soil maps. The data generated will also allow climatic change prediction with soil as a major input into the modeling.

Launched in January 2009, and using 60 randomly selected 10 x 10 km sampling locations to characterize the soils, the AfSIS project has completed 25 of the 60 projected sampling locations making the objective of completing the remaining 35 locations feasible by October 2012. Countries so far sampled include Tanzania, Ethiopia, Malawi, Mozambique, South Africa, Ghana, Mali, and Nigeria. The information generated so far is now freely available from AfSIS website: www.africasoils.net

This project is being implemented by a consortium of scientists from several institutions including the Tropical Soil Biology and Fertility (TSBF) research area of the International Center for Tropical Agriculture (CIAT), the World Agroforestry Centre (ICRAF) in Africa, the World Soil Reference Centre (ISRIC) in Europe, and the New York Columbia University Earth Institute in North America. CIAT's TSBF research team will produce spatially explicit soil and crop management recommendations to initially cover Tanzania, Malawi, Mali, Nigeria, and Kenya, where they are conducting soil fertility diagnostic trials.

The information generated mainly targets the extension service providers (public, private, and NGOs, development investors, policymakers, and scientists), using a web-enabled tool that gives globally integrated, evidence-based, and dynamic soil health information which will support soil management decisions, planning, and policy-relevant guidelines for the non-desert portions of sub-Saharan Africa.

Research results shared by the project so far indicate that when nitrogen (N), phosphorus (P), or potassium (K) are not applied to maize crops, the seed losses associated with non-use of N could be as high as 800 kg/ha; non-use of P results in seed losses of 400 kg/ha, whereas non-use of K could cause seed losses of up to 100 kg/ha. On the other hand, if one adds organic manure to the optimized NPK rates in an area, they are able to realize additional 600 kg of maize grain yields. These are only preliminary results since the trials have also been installed in Tanzania, Kenya, and Nigeria to get more data and insights on how different soil properties affect

the obtained maize yields. Other crops being tested include sorghum and rice.

These results are under discussion with national stakeholder committees with the aim of streamlining them into national or local action plans aimed at improving soil productivity and crop yields in the countries where AfSIS has generated adequate data and management knowledge. The project is also in the process of carrying out an economic analysis to determine how affected farmers will economically benefit from the introduced knowledge and technologies.

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